Winery Energy Saver Toolkit
Industry Profile
McLaren Vintners – Tank insulation

Background

In 2013 McLaren Vintners participated in the Winery Energy Saver Toolkit (WEST) program, under the Energy Efficiency Information Grant Program, funded by the Australian Government to help identify energy efficiency opportunities.

McLaren Vintners is a contract wine maker located in the South Australian wine region of McLaren Vale and they are a member of the South Australian Wine Industry Association. Their focus is on providing customers with the passion, flexibility and care which is usually only found in hands-on boutiques. McLaren Vintners crush approximately 4700tonnes of grapes annually and have the capacity to store 4.6 million litres of wine in stainless steel tanks up to 3,500 barrels.

Energy is used at every step of the wine making process, McLaren Vintners consumes just under 1,000,000kWh per annum, with the vintage period (January – April) being the most energy intensive. Refrigeration accounts for the majority of energy consumption during this period and throughout the rest of the year (for much of the wine industry, refrigeration represents 50-70% of winery energy consumption).[1] Insulation plays a crucial role in minimising refrigeration requirements. Currently McLaren Vintners have 202 tanks, 56% of are already insulated, of the remaining tanks there has been the opportunity to insulate 44 tanks which consume over 235,000kWh over the 18 weeks of summer. This equates to 24% of annual consumption and 53% of vintage consumption with an approximate annual cost of $63,330, which represents 22% of their annual electricity cost.

[1] Australian Wine industry Research Institute, 2012, Improving Winery Refrigeration Efficiency

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By insulating the tanks there is the potential to decrease refrigeration energy consumption by over 90%, allowing McLaren Vintners to not only reduce electricity consumption but also reduce their operating costs and increase efficiency.

Opportunities

McLaren Vintners are conscious of energy management and energy efficiency and are working towards achieving their vision of being "recognised as a leader and innovator of efficient quality wine processing in South Australia". McLaren Vintners have already installed energy saving measures throughout their operations that includes; variable speed drives (VSDs), cooling jackets on tanks and insulating the roof and walls of the Barrel Hall. To further improve energy efficiency McLaren Vintners commissioned an initial energy efficiency review, through mentoring and verification from ideas outlined in WEST, they were able to develop a priority list that included:

- Insulating tanks
- Insulating brine lines
- Installing VSD on remaining refrigeration plant pump
- Insulating remaining wall in the Barrel Hall & indirect evaporative cooling

From all the energy efficiency projects identified, a business case was developed based on the current energy consumption of the activity, the amount of potential energy savings, cost of the project and the return on investment.

The Business Case for Tank Insulation

As refrigeration is the major consumer of energy onsite, tank insulation was given highest priority. The following business case for the tank insulation was identified:

An additional benefit of the project is that the load on the refrigeration plant will be reduced by 243kWr, resulting in a higher efficiency.

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Measures Implemented

Heat is gained during summer through the surface area of the tanks as the ambient temperature in South Australia is warmer than the temperature to which the tanks are chilled, at McLaren Vintners tanks are chilled to 15°C and during summer this requires a temperature drop of 8°C.[2] By insulating the tanks with 75mm styrene aluminium cladding, McLaren Vintners will be able to decrease the heat gain from the ambient temperature which will allow them to chill their tanks more efficiently and therefore reduce the load on the refrigeration plant.

McLaren Vintners propose to implement the project outside of the vintage period so that there is minimal impact on operations and the tanks are operational for the next vintage period.

Outcomes

The implications for the whole site from implementing this one energy efficiency opportunity can allow McLaren Vintners to achieve:

The process of assessment which McLaren Vintners have undertaken for this project can be applied to the other projects on their priority list and are also transferable for industry wide application; further information on tank insulation is available via the WEST Toolkit and online portal.

This project is planned for implementation; in the interim, McLaren Vintners have taken steps towards packaging the tank insulation along with other projects including VSD installation on remaining refrigeration plant pump, wall insulation in Barrel Hall, and installation of a new roller door to reduce warm air infiltration into a Clean Technology Food and Foundries Investment program application.

[2] The average ambient temperature will vary throughout South Australia and can be found through www.bom.gov.au).

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